CSc 10300
Learning Overview

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Basic Programing in C++

- Programming ABC: main program structure, compilation using IDE, input output, etc.
- Variables, constants, and expressions (equations)
- Built-in types
- If - then - else (selection logic)
- Loop (iteration logic)

Writing Simple C++ Applications

- Realizing input & output (I/O)
- Dividing program into a set of functions
- Function parameter
- Using built-in "math" libraries
- Using built-in pseudo random number generator to simulate various event
- Writing a shorter program

Collection Type Introduction

- <vector> as a collection type
- Structure as a generator of user-defined type
- Structure as a bundle of built-in type variables
- Structure interface (structure variable and structure method)
- Structure -> class
- So what are objects and object-oriented programming?

Free Store

- New and delete construct
- Pointers and references
- Dynamic memory allocation and deallocation: why needed?
- What are memory-leak problems?
- C++ and memory-leaks: how to prevent?
- Why do we use <vector> instead of array old programming construct?

I/O Details

- Stream buffered I/O in cin and cout
- Treatment of good, fail, and, bad bit
- Aspect of input error correction: how much can we do?
- Introduction to file I/O

STL Containers and Algorithms

- Iterators: why needed and why not needed?
- Power of STLs (= data structures = CSc 21200)
- Lambda function and function object
- STL containers beyond <vector>

Class Hierarchy

- Inheritance
- Object overriding
- Abstractness
- Homogeneous vs Heterogeneous collections
- Why destructors?
- Template: what are they?

FLTK as GUI Development Tool

- Open-source library set: thus unix/linux environment needed
- Full FLTK programming is not intended
- Learn how to build library archive in order to develop simple FLTK applications